

Notice of Allowability

Application No.

09/698,787

Examiner

Natalie A. Pass

Applicant(s)

LEVY, VICTOR

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amendment filed 2 November 2005 and Supplemental Amendment filed 2 December 2005.
2. ☒ The allowed claim(s) is/are 12.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☒ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☒ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☒ hereto or 2) ☐ to Paper No./Mail Date _____
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____


JOSEPH THOMAS
SUPERVISORY PATENT EXAMINER

DETAILED ACTION

Notice to Applicant

1. This communication is in response to the amendment filed 2 November 2005 and the Supplemental Amendment filed 2 December 2005. Claims 1-11 and 13-15 have been cancelled. Claim 12 has been amended and remains pending.

Specification

2. The objection to the specification under 35 U.S.C. 132 for introducing new matter is hereby withdrawn due to the amendment filed 2 November 2005.

Drawings

3. The application has been allowed, and therefore formal drawings are required in response to this Office Action.

Claim Rejections - 35 USC § 112

4. The rejection of claims 12-15 under 35 U.S.C. 112, first paragraph is hereby withdrawn due to the amendment filed 2 November 2005.

Allowable Subject Matter

5. Claim 12 is allowed. The following is an examiner's statement of reasons for allowance:

Claim 12 is directed to a web-based system for facilitating diagnosis of medical symptoms. It includes means for generating an automated database that includes statistically accrued data, including actual diagnoses and patient symptoms that are input from multiple sources via a common web-based system template. The template is used to generate a matrix that includes numerous possible post-test diagnostic outcomes, each outcome indicating a possible disease and probability for the disease. The possible post-test outcomes are reported to a user as a list of diagnostic probabilities ranked from the most likely to the least likely of possible diagnoses for a patient under examination. The system also includes means for generating each possible post-test outcome in the matrix as an array of mathematical factors multiplied together in series with one of the factors being a pre-test odds factor and the other factors in the array input as independent likelihood ratios in which the likelihood ratios in the array are multiplied together with the pre-test odds factor.

Each likelihood ratio is calculated from a web-based likelihood ratio template, the likelihood ratio template having numerous cells, each with an independent cell value, created by a user-selected number of rows and columns, that is greater than 2 X 2, for calculating likelihood ratios based on more than 2 criterion, the more than 2 criterion including positive and negative test results and further including other criteria that are independent of test results, with each likelihood ratio being calculated by calculating a positive likelihood ratio ("positive LR") and negative likelihood ratio ("negative LR") for each cell value in each column and each row, using an algorithm that includes the following mathematical expressions:

$$(1) \text{ Positive LR} = (X/a) / ((b-X)/(M-a));$$

$$(2) \text{ Negative LR} = (a-X/a) / ((M-a) - (b-X)/(M-a));$$

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and wherein X = a mathematical cell value;

M = the sum of all cell values across all rows and columns;

b = total of specific column containing X ;

a = total of specific row containing X ;

and using calculated likelihood ratios from the above expressions to create the array of likelihood ratios that are multiplied together with the pre pre-test odds factor to create the possible post-test outcome that indicates a possible disease and probability for the disease according to the following mathematical expression:

(3) Pre-test odds $\times LR_1 \times LR_2 \times LR_3 \times LR_4 \dots \times LR_n$ = Post-test odds, wherein

LR_{1-n} = positive and negative likelihood ratios calculated according to equations

(1) and (2) above.

The closest prior art of record, Iliff et al. (USPN 6, 206, 829) and the Blinowska article: "Diagnostica-A Bayesian Decision-Aid System-Applied to Hypertension Diagnosis"

<http://ieeexplore.ieee.org/iel5/10/5657/00216406.pdf?arnumber=216406> and the Sonis

article: "How to Use and Interpret Interval Likelihood Ratios"

<http://www.stfm.org/fmhub/Fullpdf/june99/rs.pdf> disclose analysis of medical data using statistical techniques, however do not disclose or fairly suggest each likelihood ratio is calculated from a web-based likelihood ratio template, the likelihood ratio template having numerous cells, each with an independent cell value, created by a user-selected number of rows and columns for calculating likelihood ratios based on more than 2 criterion, the more than 2 criterion including positive and negative test results and further including other criteria that are independent of test results, each likelihood ratio being calculated by calculating a positive likelihood ratio ("positive

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LR”) and negative likelihood ratio (“negative LR”) for each cell value in each column and each row, using an algorithm that includes the following mathematical expressions:

$$(1) \text{ Positive LR} = (X/a) / ((b-X)/(M-a));$$

$$(2) \text{ Negative LR} = (a-X/a) / ((M-a) - (b-X)/(M-a));$$

and wherein X = a mathematical cell value;

M = the sum of all cell values across all rows and columns;

b = total of specific column containing X ;

a = total of specific row containing X ;

and using calculated likelihood ratios from the above expressions to create the array of likelihood ratios that are multiplied together with the pre pre-test odds factor to create the possible post-test outcome that indicates a possible disease and probability for the disease according to the following mathematical expression:

$$(3) \text{ Pre-test odds} \times \text{LR}_1 \times \text{LR}_2 \times \text{LR}_3 \times \text{LR}_4 \dots \times \text{LR}_n = \text{Post-test odds, wherein}$$

LR_{1-n} = positive and negative likelihood ratios calculated according to equations (1) and (2) above.

Iliff et al. (USPN 6, 206, 829) teaches means for generating an automated database that includes statistically accrued data that is input from multiple sources via a common web-based system template, a plurality of possible post-test diagnostic outcomes, each outcome indicating a possible disease and probability for the disease, but does not disclose or fairly suggest the common template being used to generate a matrix and reporting the possible post-test outcomes to a user as a list of diagnostic probabilities ranked from the most likely to the least likely of possible diagnoses for a patient under examination.

The Blinowska article: "Diagnostica-A Bayesian Decision-Aid System-Applied to Hypertension Diagnosis," 1993, URL: <http://ieeexplore.ieee.org/iel5/10/5657/00216406.pdf?arnumber=216406> teaches the common template being used to generate a matrix and reporting the possible post-test outcomes to a user as a list of diagnostic probabilities ranked from the most likely to the least likely of possible diagnoses for a patient under examination but does not disclose or fairly suggest one of the factors being a pre-test odds factor.

The Sonis article: "How to Use and Interpret Interval Likelihood Ratios," June 1999, URL: <http://www.stfm.org/fmhub/Fullpdf/june99/rs.pdf> teaches one of the factors being a pre-test odds factor and likelihood ratios in the array are multiplied together with the pre-test odds factor to produce the possible post-test diagnostic outcome that indicates a possible disease and probability for the disease but does not disclose or fairly suggest each likelihood ratio is calculated from a web-based likelihood ratio template.

6. Any comments considered necessary by Applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement for Reasons for Allowance."

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure. The cited but not applied prior art (GB 2328507A) discloses electronic analysis of medical diagnostic information. In accordance with MPEP § 1302.12, this reference is not submitted to Applicant but will be scanned and added to the Image File Wrapper (IFW) for viewing and downloading by the applicant, if desired.

8. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington D.C. 20231

or faxed to: **(571) 273-8300.**

For informal or draft communications, please label
"PROPOSED" or "DRAFT" on the front page of the communication
and do NOT sign the communication.

After Final communications should be labeled "Box AF."

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Natalie A. Pass whose telephone number is (571) 272-6774. The examiner can normally be reached on Monday through Thursday from 9:00 AM to 6:30 PM. The examiner can also be reached on alternate Fridays.

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10. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Thomas, can be reached at (571) 272-6776. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Receptionist whose telephone number is (571) 272-3600. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

11. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

NP

Natalie A. Pass

December 7, 2005


JOSEPH THOMAS
SUPERVISORY PATENT EXAMINER